

### REMARKS

This responds to the Office Action mailed on December 17, 2003. No claims have been amended, canceled, or added. Claims 4, 6-8, 12-17, and 25-31 were previously withdrawn from consideration. Claims 1-17 and 25-31 are now pending in this application.

### RESPONSES TO EXAMINER'S FINAL REJECTION

The Office Action errs in its insistence "that precisely the polymer particles dispersed in the material are the fibers" (Office Action at page 4) are taught in Hoffman. Following is a quotation from Hoffman that teaches unequivocally an *in situ* formed polymer particle that is not a fiber.

The *dispersions of polymer* and dispersion stabilizer in the polyepoxide *continuous phase* can be made by (I)(a)(1) providing an adduct by reacting a minor amount of functional monomer with a polyepoxide continuous phase (2) providing a dispersion stabilizer by reacting the adduct with at least one monomer, and (3) polymerizing said monomer(s) in the polyepoxide *continuous phase* and in the presence of said dispersion stabilizer; or (b)(1) providing an adduct by reacting a minor amount of functional monomer with a polyepoxide continuous phase (2) providing a dispersion stabilizer by reacting the adduct with at least one monomer, while simultaneously polymerizing said monomer(s) in the polyepoxide continuous phase and in the presence of said dispersion stabilizer; and (II) vinylizing the polyepoxide.

As used herein the term "stable" is meant to refer to dispersions which remain substantially constant (i.e., do not undergo flocculate or dissolve) under conditions of preparation as well as conditions of thermal cure. For example, the *dispersion of polymer remains stable (e.g., insoluble)* under normal preparation, handling and processing (e.g., curing) conditions by maintaining a substantially constant morphology (e.g., size and distribution) in the *continuous phase* at some temperature normally some temperature above 60.degree. C. Stable dispersions are, for example, those dispersions in which the *polymer dispersed phase* is insoluble in the *continuous phase*. Insolubility can be qualitatively identified by a cloudiness of the composition to visible observation.

(Hoffman at column 1, line 66 to column 2, line 28. Emphases added). And Hoffman applies this terminology at column 8, lines 52-65 as particles and dispersion phase particle size thusly:

The properties of the dispersion are influenced by a variety of factors including the identity of the components, *the particle size and concentration of the dispersed phase*, the hardness or softness of the *particles of the disperse phase*, the concentration of the dispersion stabilizer and many other factors. For many applications it is most desirable to employ a dispersed phase polymer having a solution temperature above the polymerization temperature of said polymer.

For most practical applications, the stability of the dispersion and the property enhancement due to the disperse phase polymerizate will be optimized with *particles* that are less than some critical particle size which is about 20 microns.

(Hoffman at column 8, lines 52-65. Emphases added). Hoffman teaches only "particles" without reference to their morphology, *e.g.*, whether spheroids, fibers, ganglia, *etc.* Because the Office Action has misconstrued the plain meaning of Hoffman, and because the combination of Hoffman with Marrs does not teach all the claims limitations, withdrawal of the rejections is respectfully requested.

### §103 Rejection of the Claims

Claims 1-3, 5 and 9-11 were rejected under 35 USC § 103(a) as being unpatentable over Marrs et al. (U.S. 5,355,283) in view of Hoffman et al. (U.S. 5,055,532). Applicant respectfully traverses the rejection and requests the Office to consider the following.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8<sup>th</sup> Ed, Rev.1).

The Office Action admits that Marrs et al. does not disclose "using a fiber reinforced encapsulation material." (Office Action at page 2). The Office Action appeals to Hoffman et al. to supply this deficiency. Applicant notes that Hoffman mentions fibers only in the Background

and Summary sections, with neither a qualitative nor qualitative discussion of such fibers in the Detailed Description. Applicant respectfully asserts that such disclosure is not an enabling reference. Withdrawal of the rejections is respectfully requested.

Regarding the first criterion, because Hoffman refers to fibers only in the Background and Summary, which discussion in the Summary appears to be more background information. Because there is no mention of fibers in the Detailed Description section, Hoffman teaches away from fibers within the scope of what is claimed. Consequently, the use of Hoffman amounts to a teaching or suggestion to make the claimed combination is based on Applicant's disclosure. (M.P.E.P. § 2143 8<sup>th</sup> Ed, Rev.1). Withdrawal of the rejections is respectfully requested.

With regard to the third criterion, Hoffman has turned his focus away from fiber fillers to *in situ* formed polymer particles. As set forth above, Hoffman fails to teach the morphology of his particles such that all the limitations of the instant claims are not taught in the cited references. Withdrawal of the rejections is respectfully requested.

With regard to claims 2 and 3, Applicant notes the Office refers to Hoffman and a particle size of the fibrous filler material "being a critical particle size of about 20 microns." This assertion is in error. The particle size in Hoffman is exclusively in reference to dispersed polymer particles and not with respect to any fibers. Accordingly, the rejections should be withdrawn.

Regarding the first criterion, Applicant respectfully asserts that the combination of Marrs and Hoffman can only come by using Applicant's disclosure as a guide. Marrs uses bond wire technology that is not disclosed by Applicant, and Marrs is endeavoring to shrink the size of the package by encapsulating some or all of the wiring within a single encapsulant. Hoffman neither teaches nor suggests the application of his polymer-modified vinylized epoxy resins to a microelectronic device. Applicant therefore respectfully asserts there is no motivation to combine Marrs with Hoffman outside using Applicant's disclosure as a guide. Because the subject matter as a whole is unobvious over the cited references, withdrawal of the rejections is respectfully requested.

Regarding the second criterion, Applicant respectfully asserts that the combination of Marrs and Hoffman can only come by using Applicant's disclosure as a guide. Marrs is concerned with any moisture getting to the die because "a good seal does not form at the

interface between the traces 105 and the encapsulant 103 . . . ." (Marrs at column 2, lines 17-20).

If one were to include fibers from Hoffman with the encapsulant of Marrs, Marrs' problem of moisture would reappear since the fibers do not have adhesive quality and therefore create the likelihood of porosity along Marrs' traces 105 and Marrs' vias 507. Because there is no expectation of success to overcome Marrs' problems by the addition of fibers from Hoffman, the combination of Marrs with Hoffman can only be made by using Applicant's disclosure as a guide. Because the subject matter as a whole is unobvious over the cited references, withdrawal of the rejections is respectfully requested.

Regarding the third criterion, the limitations of claims 2, 3, and 11 are neither taught nor suggested by the combination of Marrs with Hoffman and withdrawal of the rejections is respectfully requested. Further regarding claims 5, 9, and 10, that the Office Action has assembled a mosaic of references, because of the unsuitability of combining Marrs with Hoffman, Applicant respectfully asserts that the subject matter as a whole for these claims, is unobvious over the cited references. Withdrawal of the rejections is respectfully requested.

AMENDMENT UNDER 37 C.F.R. 1.116 – EXPEDITED PROCEDURE

Serial Number: 09/854539

Filing Date: May 14, 2001

Title: POLYMERIC ENCAPSULATION MATERIAL WITH FIBROUS FILLER FOR USE IN MICROELECTRONIC CIRCUIT PACKAGING

Assignee: Intel Corporation

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Dkt: 884.415US1 (INTEL)

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, John Greaves at (801) 278-9171, or Applicant's below-named representative at (612) 349-9592 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

INTEL CORPORATION

By their Representatives,

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Date Feb. 18, 2004

By Ann M. McCrackin  
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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 18 day of February 2004.

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Signature